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MILITARY SMALL GROUP PERFORMANCE UNDER ISOLATION AND STRESS

CRITICAL REVIEW

I. INFORMAL, NATURAL GROUPS: DEVELOPMENT, STRUCTURE, AND FUNCTION

TECHNICAL DOCUMENTARY REPORT AAL-TDR-62-31

June 1962

ARCTIC AEROMEDICAL LABORATORY

AEROSPACE MEDICAL DIVISION
AIR FORCE SYSTEMS COMMAND
FORT WAINWRIGHT, ALASKA

Project 8243-11

(Prepared under Contract AF 41(657)-323 by
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This report reviews the principles of group development, formation of group structure, and functioning of informal natural groups, as a background and context for the study of the behavior of formal organizations. It is the first of five literature reviews of scientific investigations of group behavior, isolation, and stress, focused on the problems of organization, management, supervision, and human relations at AC&W sites in the Alaskan Air Command. Emphasis is placed here on the basic processes of group formation, development of group structure, social power (and leadership), communication of information, and group norms as regulators of behavior. Implications for military commanders are discussed from the viewpoint that the military commander, at every level, is an appointed leader who must exploit principles of human behavior effectively in order to realize his role and accomplish his mission.

1. Military Psychology
2. Stress (Psychology)
3. Group Dynamics
4. Leadership
5. Alaska

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FOREWORD

This review is part of a bibliographic study of research on factors related to the effectiveness of Aircraft Control and Warning (AC&W) sites in Alaska. The literature surveyed has previously been summarized in a series of annotated bibliographies (Reports AAL TR 61-19 to 61-24). The critical reviews based on this literature have been prepared as a series of five reports, covering the following topics: I. Informal, Natural Groups: Development, Structure, and Function; II. Dimensions of Group Structure and Group Behavior; III. Environmental Stress and Behavior Ecology; IV. Organizational Staffing; and V. Psychological Principles of Management and Leadership. The assistance of Mr. George Haven is acknowledged in the preparation of these reviews.

ABSTRACT

This report reviews the principles of group development, formation of group structure, and functioning of informal, natural groups, as a background and context for the study of the behavior of formal organizations. It is the first of five literature reviews of scientific investigations of group behavior, isolation, and stress, focused on the problems of organization, management, supervision, and human relations at AC&W sites in the Alaskan Air Command. Emphasis is placed here on the basic processes of group formation, development of group structure, social power (and leadership), communication of information, and group norms as regulators of behavior. Implications for military commanders are discussed from the viewpoint that the military commander, at every level, is an appointed leader who must exploit principles of human behavior effectively in order fully to realize his role and accomplish his mission.

PUBLICATION REVIEW

HORACE F. DRURY
Director of Research

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MILITARY SMALL GROUP PERFORMANCE UNDER ISOLATION AND STRESS - CRITICAL REVIEW

I. INFORMAL, NATURAL GROUPS: DEVELOPMENT, STRUCTURE, AND FUNCTION

SECTION 1. INTRODUCTION

This report is the first of a series of five which present critical reviews of the scientific literature of group behavior, isolation, and stress focused on the problems of organization, management, supervision, and human relations at AC&W sites in the Alaskan Air Command. Selected annotated bibliographies of this literature have been published in earlier reports, Numbers AAL TR 18 to 24. Each of the five reviews presents a critical discussion and evaluation intended to summarize the "state of the art" with reference to a particular facet of the general problem and interprets the information as it relates to Alaskan AC&W sites.

The objective of this first review is to set up a context for the discussion of group and organizational behavior. Organizations are formal groups in which responsibilities, functions, roles, and procedures are prescribed, usually by an external (and in the military, by a superior) authority. However, studies of formal organizations have shown that the established patterns of responsibility and the prescribed interaction patterns for group members, from the appointed head to the lowest individual, are rarely adhered to faithfully in the actual behavior that occurs. Formal structure is correctly regarded as a guiding plan or strategy for formal groups but not as a blueprint. The patterns of on-going behavior that occur are determined in part by formal structure, in part by the realities of the situation, which may aid or hinder conformity in varying degree, and also by the characteristics of the individuals participating and the interactions among these individuals over time.

The behavior of an organization is thus not a copy of a blueprint, but very much a matter of complex human interactions among people and between people and the physical and social environment with which they must contend. When viewed in this way, an organization has not one structure, but at least two, formal (prescribed) and informal (on-going behavior patterns). The actual organization is the latter, which develops and changes over time as a function of operating conditions, personnel, actions of superiors, compliance of subordinates, and the like. The study of organizations, therefore, requires insight into principles of individual and group behavior. Since the basic psychology of group behavior derives from natural, informal groups, it is to this type of group that attention must first be directed.

This report summarizes the psychological principles of informal, natural groups, which spring up whenever individuals with common motives conducive to their interaction come together. It explains when groups do or do not form, how they develop, how their structure comes about, and how the informally developed group structure influences the behavior of its members. With this information as background, it is possible to understand better the behavior of members of formal groups (organizations) and the problems of conformity of formal groups to their prescribed behavior patterns.

The psychological principles outlined here may be regarded as generalizations concerning "human nature." They are statements concerning the way that people behave naturally. Efforts to influence and control human behavior are more successful when they exploit and enlist such principles than when they either ignore or oppose them. If one may be satisfied to accept the fact that water will not naturally flow up hill, because this is contrary to its natural properties, and not regard the water as "uncooperative," then the same attitudes may be justified with regard to the behavior of people. The ideal strategy for control of human behavior appears to be that which enlists natural human tendencies toward the accomplishment of desired goals.

A successful human organization almost invariably provides a basis for cooperative action to achieve the mutual goals of its

management and its personnel. The employer's interest in efficiency naturally depends on cost, productivity, loyalty, cooperation, production-oriented morale, and initiative. At the same time, the employees' interests are usually centered in individual careers, families, and other personal goals. If the organization provides opportunities for individuals to advance their own interests by advancing the goals of the organization, cooperation is usually assured. To the extent that the goals of organization and personnel are contradictory, conflicts may be expected. The rationale for understanding and dealing with such conflicts is the principal subject of this report.

Military groups frequently include a large proportion of "civilians in uniform," whose motivation for military service is marginal, at best, and this problem has been acute at Alaskan AC&W sites, where assignments are generally non-voluntary. In fact, remote site duty in Alaska has been almost universally regarded as unpleasant (3). These attitudes reflect many factors that are beyond the power of military authorities to change, particularly remoteness, isolation from families and other social contacts, and the Arctic environment. Nevertheless, it has been assumed that, within the framework of military organization and military discipline, there may be alternatives concerning other factors which may make a difference between better or poorer morale, cooperation, and operating effectiveness. It is with those factors that this series of reports is primarily concerned. Even if Utopian solutions are beyond reach, this effort will have been of value if it assists in a constructive evaluation of the problem.

SECTION 2. BASIC PROCESSES OF GROUP FORMATION

Most of the important groups in which people move, the family, the play groups of childhood, the teen gangs, and the organizations in church, school, business, government and the military, have common characteristics and function according to common principles. Topics such as leadership, cooperation, control of decisions, formation of cliques and factions, intergroup tensions, and the like can be best understood as problems of group behavior.

Military organization generally follows the line-and-staff pattern, with the chain of command reserved to the "line." That is, the line is the pathway for command relations, both upward and downward, while staff personnel perform technical, advisory functions to their line supervisors at every level. Brown (2) has emphasized the fact that organization is primarily an assignment of responsibility and dependencies, a modus operandi, but that the behavior of an organization involves the interactions of men - not the spaces on a chart.

The conventional line-and-staff organization structure achieves both unity of control and specialization of supervisory functions and assigns every member of an organization specific authority ("power") and responsibility for particular functions and to a particular superior. Nevertheless, these principles, while important and consistent with the conclusions presented in this report, fall short of presenting a rational analysis of the many-sided problem of group organization. What is needed is an analysis of the behavioral implications of various organizational strategies. Such an analysis is implied in the following discussion, which points out generally the consequences that may be expected for various alternatives. This analysis follows rather closely the presentation in Chapter 11 of the author's Essentials of Psychology (8).

Social Situations

All behavior of people in the real world is social because it

involves interactions with other people or with the products of people, or both. In group situations, people react to other people and to various aspects of the social setting as stimuli. The impact of the social setting is profound and frequently overlooked because many of the background stimuli are unobtrusive and may be taken for granted. The full range of interrelated factors in social situations which act as background stimuli and which can influence behavior significantly despite their background character is illustrated in the following outline which gives focus to the discussion of the development and effects of group structure:

> "Factors related to individuals involved: Their number (size of the aggregate): homogeneity or heterogeneity in terms of their backgrounds (e.g., sociocultural, economic, educational affiliations and ranks); age, sex, and the like.
>
> "Their relationships to other participating individuals: previous acquaintance and the existence or nonexistence of established relationships among all or some of the individuals.
>
> "Their particular motives related to participating in the situation, including the extent to which some motives are common to various individuals.
>
> "Factors related to the problem or task: Whether it is new or habitual; the degree of its structure (number of possible alternatives for its attainment or solution); proportion of individuals present necessary for the activity; the capacities in which individuals function.
>
> "Special communication related to it, such as suggested lines of action or instructions; the content and source of communication.
>
> "Factors related to the site and facilities: The physical (laboratory, open space, auditorium, tavern, club, church, hotel lobby, etc.); tools and technological means available; the presence

of nonparticipating individuals or groups in the surroundings and their relation to the individuals and events taking place; opportunities the site affords for movement and contact with others.

"Factors pertaining to relations of an individual to others, the site, problem or task: Relation of the problem or task to the individual, its significance to the individual and within any existing scheme of relationships among the individuals, the related abilities and talents of individuals; the individual's relation to the content and source of any special communication; the existence or nonexistence of standards of conduct or social norms relevant to the locale, situation, problem or task, and other individuals." (10, p. 121)

Group Formation

An act of organization implies both some differentiation of functions (division of labor) and specialization of roles in the reciprocal expectations among individuals interacting with each other. In this sense organization exists both in temporary, transitory interaction, such as when a makeshift crew flies an aircraft together at a strange base to make up flying time, as well as in well-established teams. The difference at these two ends of the continuum is in the degree of stabilization of the reciprocal relations. Organization may also vary from unexpressed, vague, and ill-defined assumptions about role and function in many informal situations to highly specific formal contracts, as in military assignments.

However, people do not organize merely because they happen to come together, although proximity is an important factor in the acquaintance process. Nor do the manner and form of organization occur capriciously. The act of organization is a form of group problem-solving. It occurs when people, who have common problems or needs and an opportunity for mutual interaction, perceive each other as having common motives, needs, or goals, that could be more successfully attained by joint actions than individually. Such conditions are conducive to interaction. If opportunities for interaction

are not possible for any reason or if common motives capable of joint attainment are not perceived, interaction is unlikely to be attempted. If interaction is attempted, but appears to fail in attainment of the mutual goals, it is likely to be abandoned.

The nature of interactions attempted is largely predictable in relation to the circumstances present when organization is considered and these are well-defined by the outline of four classes of social stimuli above. Some common social situations involve little, if any, organization. For example, except for keeping reasonably quiet and not interfering with other people, members of the audience at a movie or theater may have nothing to do with each other. They may laugh or sigh or applaud in unison, but this is really a collective (not cooperative) response to the action which they are all watching. The typical public audience is composed of people who have no necessary prior acquaintance or relationship with each other; they participate collectively in a common facility, but for individual purposes and without substantial interaction.

In contrast to such collective situations, group situations are definitely and frequently complexly organized. Groups develop their organizational structure through the interactions of their members, and the stability of structure, reflected in the roles allocated to various individuals, is a function of the quality of such interactions over time in relation to the attainment of mutual goals.

People usually belong to many groups in order to satisfy different needs. In addition to belonging to one or more family groups, a man may belong to church groups, fraternal groups, a credit union, and any number of work, study, social, and purely recreational groups, some highly formal and others informal. The different group memberships not only satisfy different needs, but also like these needs, which vary in importance at different times, they may have variable importance to the individual and his time in participation in them may vary widely.

Formation of Informal Groups

The universal natural pattern of social organization, and the oldest, historically, is informal. From earliest times, groups have

developed as various individuals with mutually perceived common motives interacted together. When roles and functions are mutually determined, in contrast to being assigned by an authority, the organization is considered informal. In informal groups the stable structure of reciprocal expectations between individuals, such as depending on each other for help, information, or criticism, the roles, and statuses of members, all develop as products of behavioral interactions.

Each person's role depends on his own behavior as well as on the behavior of other participating members. If any one at any level within a group is unwilling or unable to play a role, if his assumption of it is not acceptable to other participants, or if the expectations of the group are impractical in the situation, the actual role developed will represent a compromise of the various pressures. For example, if appointed leaders fail to perform as planned, adjustments within the group inevitably stabilize in the form of modified arrangements. The actual interactions, rather than the original plans, determine the working structure, which is seldom a true copy of the blueprint.

The analysis of group structure, for both theoretical and practical purposes, should, therefore, begin with the small, informal group and then consider the effects of superimposing formal structure. Planners of formal groups might prefer to proceed in the opposite order, laying out organizational plans first and then attempting to follow them. However, the understanding of organizational strategies is based on principles of group behavior, and these need to be understood first in order to understand human behavior in formal groups.

Common motives conducive to group formation. Since the formation of informal groups represents the natural tendency of people to join together for mutual self-help, cooperation is a fundamental characteristic of group behavior. Where cooperation is not evident in formal groups it is more likely that informal cooperation toward private goals unrelated to those of the formal group is occurring among informal subgroups. Nevertheless, as a general rule, people are motivated to help each other by common needs which can be satisfied only by cooperative action, or at least better in a cooperative

group than alone. Such needs are recognizable in the names and purposes of various organizations established for "the advancement of" or for "the prevention of" certain events or activities. In modern adult society there are innumerable organizations which illustrate common social needs. These are illustrated as follows:

Social Need	Types of Organization
Earning a living	Any organized enterprise providing employment
Bargaining with employer	Labor union, professional association
Spiritual support	Church
Aesthetic expression	Art leagues, music clubs, etc.
Companionship	Fraternities, sororities, golden age clubs
Prestige	Country clubs, service clubs, private clubs, executive clubs, etc.
Power	Political organizations, other large or powerful organizations
Self-improvement	Toast-master clubs, professional and special interest groups, study groups, etc.
Thrills	Parachute jumping clubs, flying and glider clubs, skin diving groups
Entertainment	Bridge clubs, theater clubs, etc.

People who are attracted to a particular group need not share all of their motives with the others, but they do need to have a sufficiently pronounced common motive to determine a basis for their mutual interaction. This is usually the basis on which the group goals become clarified and group structure develops. If an individual's participation in a group succeeds in providing some measure of satisfaction of the motives which attracted him to the group, he is likely to remain in the group and become personally involved in it. However, personal involvement depends also on the importance of the activity in the individual's total motivational pattern. Some groups satisfy a number of motives for an individual.

Motives not only attract people to groups; they also play a significant part in the continuation of group interest (morale) and participation. If a man's participation and satisfactions are incompatible with the common motivation of the group, he may either leave the group or find himself out of step with it. If a group organized for some commonly perceived purpose encounters difficult obstacles or failure, the effect may vary from minor, temporary to total, permanent disintegration of the group, depending on circumstances. Once a group is stabilized, however, it is more difficult to destroy and may even find new common motives as a basis of continued interaction.

Incipient, potential groups. Groups do not spring into being fully developed. They must go through a definite growth process involving interaction of their members. Many incipient groups meet once or twice and then fall apart, if their interactions are unproductive. Others get off to a good start and develop into stable organizations. An incipient group is at first only a potential group. At the start it has a common goal, but its members have no experience background in working together as a separate group. Its members may either be attracted together informally, because of common interests, or formally assembled by external authority and assigned a group task. An example of the former might be a group who enjoy fishing or playing cards together; the latter might be illustrated by a committee or a work detail staffed with newly assigned personnel.

Such incipient groups differ from collective situations in that their members both perceive their relatedness to each other and have a mutual goal. However, the members have not yet interacted with each other and have no established expectations or reciprocal relations to each other. They may form tentative expectations based on past experience in similar or related groups, on gross impressions of individuals, or derived from stereotypes reflecting age, rank, position, appearance, manner, speech, and the like. However, such tentative expectations must be tested and reciprocation must be learned by every individual participating. Until this is accomplished, interpersonal relations tend to be constrained. Since the relations among individuals in incipient groups have no established pattern group-related behavior must be adjusted to the immediate situation from moment to moment.

One of the most striking demonstrations of the need for people to learn to work together was made by a group of Air Force investigators (Hood, et al., 4) who studied team performance of B-47 (jet medium bomber) crews. This high-performance aircraft is so technically complex that it must be flown "by the book." Consequently its flight procedures are rigidly standardized and the detailed duties of each of its three crew members are specified precisely for every flight maneuver. In preparation for assignment to a B-47 crew, pilots and radar observers attend special schools at which they are trained in their specialized duties.

Notwithstanding such standardization, Hood and his colleagues found that the amount of agreement among members of active B-47 crews on "who does what, when" on a questionnaire concerning a sample flight mission depended on the length of time that crew members had flown together as a crew. Neither individual flying experience nor even prior experience on other B-47 crews made any difference. The critical factor in determining agreement within particular crews was the amount of time that they had worked together as a crew. This study found also that crew agreement on "who does what, when" is highly correlated with ratings of crew proficiency by superior officers.

There is little difference between an incipient group and a temporary, short-term, or impromptu group, as far as effective relations between members are concerned. However, if the individuals continue to interact in a joint effort to accomplish a mutually important goal, in time reciprocities and expectations develop. These are accompanied by specialization of responsibility in separate roles which leads to stabilization of behavior in the perspective of the longer time over which interactions occur. As a result, moment-to-moment events have less and less effect in determining the interactions that occur, and relations among members of the group achieve continuity and stability.

SECTION 3. DEVELOPMENT OF GROUP STRUCTURE

The group structure includes roles, the status hierarchy, and thus the power structure, the communication patterns, and the group's approved ways of doing things, which are called group norms. An interesting aspect involving all of these is the "in-group," which reflects a stable structure.

The "In-Group"

The sharing of mutual problems, frustrations, successes and failures gives members of any group a unique common experience that sets them apart from other people in their circle of work and living contacts. One of the characteristics of this "in-group" relationship is its exclusiveness, which even shuts out wives, sweethearts, and other close associates. Members of an in-group tend to perceive things alike from their common background. They enjoy the same humor and react to trouble, advantages and disadvantages affecting their group in much the same way. Their evaluations of people and events tend to agree.

This unique frame of reference is the basis of "in-group awareness" which separates in-group members, regarded as "we," from outsiders, who are classed as "they" on matters relevant to the group's existence. Outside of matters clearly relevant to the group, however, the in-group attitudes often do not carry over. Thus, members of a work group may have strong in-group attitudes on matters related to their common task performance, but outside of work they may belong to different social, religious, and professional groups. For example, the members of a radar-operations crew may have great pride in their crew and work together to get their job done, while away from the job the officers, NCO's, and enlisted members may have widely differing affiliations and activities.

In-group awareness reflects a stable system of reciprocal relations with other group members and some degree of affiliation with the group, arising out of satisfaction derived from participation. It is essential to a feeling of "belonging" in the group and leads to the

process, described by Sherif and Sherif (10, p. 167), in which the social becomes personal. That is, "the individual comes to experience the relationships and values of a group in intensely personal ways. . . . The group values become one's own cherished values. Achievement of group goals is experienced as personal victory. Failure or defeat of group efforts becomes one's private misfortune."

Differentiation of Roles

Division of labor is a natural characteristic of cooperative effort and naturally leads to the differentiation of roles, that is, the development of separate roles for members performing different functions. The fact of performing different functions in the common task implies variations not only in duties, but also in the level of authority, the particular communications, and the specific ways in which various individuals contribute to the common task. Development of a role depends also on the specific capacities, background, limitations, and peculiarities of each individual in relation to other persons and task demands.

Roles develop according to the expectations that others hold for an individual and his ability to fulfill such expectations. Thus, even when a particular type of job is highly standardized, the specific roles of the individuals assigned to it may vary considerably. Role variations may reflect characteristics such as age, experience, strength, speed, cooperativeness, talkativeness, wisdom, friendliness, and many others, as these are reacted to in the situation.

Stabilization of reciprocal relations among people in an organization is the product of experience in interaction, that is, of learning. Each individual learns to play his role according to his capabilities and opportunities and also as he perceives the expectations of his colleagues. He not only learns his own role, but also learns to expect others to react in certain ways. Thus, he exercises some influence on the development of others' roles and on their learning of them. As time goes on this learning leads to the formation of highly specific roles by every member of the group.

Role specialization also tends to reflect increasingly the position of the individual in the status hierarchy. One individual

may become "the boss," another will stabilize at the "bottom of the totem-pole," and most will fall somewhere in-between. Each man's position influences the nature and extent of his responsibility and of his contacts with other individuals. His position colors his perception of events and affects the way that he is treated by others (that is, in regard to deference, respect, manner of address, etc.) and the way that he treats them. The role in the group thus exercises differential effects on the experiences of individuals in the group and on their behavior.

Status Hierarchies

Every role has a relative status within a group, reflecting its importance, its power, prestige, and contribution to the common effort. The differences in respect accorded by group members to the various roles and to the persons occupying them reflect an order of relative status, which is called a status hierarchy. A status hierarchy can be recognized in almost every group and it becomes clearer as role relationships stabilize. This development is a natural consequence of each group's evaluation of the various functions performed, on the basis of how they contribute to the group's success. Even peer groups and so-called "leaderless groups," used in research in which differential status is deliberately excluded by agreement, a hierarchy of influence always appears. The most pronounced indicator of status is the deference with which different individuals are treated by other group members.

To a considerable extent differential status is a consequence of division of labor. A ship cannot follow more than one course and its control must be confined to a command group. At the same time, it cannot sail by command alone. The functions of the engine, deck, communications, galley and other divisions of the crew are essential to its effective operation. So it is with all groups; they include a variety of necessary functions and these differ in skills required and in the importance attributed to them by members of the group. Group members are accorded varying respect and deference in relation to this evaluation, and a relatively small number in key positions receive very high consideration.

SECTION 4. SOCIAL POWER

The most direct consequence of differential attribution of respect is power, which is the essential process in leadership. Lippitt and his associates (5) defined social power as "the potentiality for inducing forces in other persons toward acting or changing in a given direction." According to this definition, persons who fill highly respected roles within a group acquire the power to influence the behavior of group members who, in effect, attribute this power to them. Power means the same thing whether it is direct or indirect, as long as it results in influencing people to move in a desired direction. The principal leader of an informal group is thus the individual with the greatest power to influence the group - and his power is given by the other members as reflected in their deference, respect, and willingness to follow him.

Research on this informal process of attribution of power in a variety of situations has clarified many of the facets of the leadership process. The following aspects of power relations in informal groups have been substantially confirmed:

1. Attitudes toward high-power members by other group members: Group members act toward those members, to whom they attribute high power, by

a. imitating their behavior;

b. accepting their efforts to exert influence;

c. treating them with greater deference and respect than they extend to low-power members;

d. approaching them indirectly and non-directively, when trying to influence them.

2. Behavior of high-power members toward other group members: Group members, who have received high attributed power from other members tend to

a. initiate more social influence attempts (than do low-power members) and with greater success;

b. act more directively (than do low-power members) in the manner of their influence attempts;

c. have more indirect influence (than do low-power members), through imitation and what Lippitt, et al. (5) called behavioral contagion; they tend also to resist, to a greater extent, direct influence attempts aimed at them;

d. perceive their own power positions in the group more accurately than do low-power members; and they are reinforced in their efforts to initiate influence by their more accurate perception of their power. Hence they tend to a greater extent to be active in voluntarily seeking out opportunities to exert direct and indirect influence.

It is apparent then, that power is a basic attribute of leadership status and that prestige and privilege are by-products of power. The deference to their chosen leaders shown by lower-power members and the successful exercise of power not only confirm the power individual's perception of his position, but also encourage him to test his power and to develop it by acting in other ways in a manner consistent with his position in the group. As a consequence he may obtain superior facilities, assistance with minor duties, relief from chores and other conveniences which then become not only utilitarian aids, but also and more significantly, status symbols.

Status and power symbols are common and widely respected and sought after, not only in the military, but also in almost all areas of American society. Military groups are stratified by rank and the insignia of rank are the most visible and pervasive power symbols. Wings, class rings, cap devices, and flags are other visible status symbols. However, more subtle and perhaps more tangible symbols of the power accompanying status are such factors as the separate clubs and mess facilities, higher salaries, and privileges (such as freedom from O.D. for field grade officers, private rooms for officers and senior NCO's, and freedom from K.P. for NCO's) that accompany

rank. Similar symbols can be found in industry, academic institutions, and other civilian activities. The symbols of power are everywhere and reflect the extent to which this fundamental aspect of group behavior is ingrained in the very fiber of society.

Limits of power. A distinction must be made between power and freedom and this is perhaps most apparent when abuse of power leads to dethronement. In informal groups in which the group members themselves are the source of power, high status and accompanying power are usually conferred on those individuals who are perceived by group members as capable of guiding the group toward achievement of its goals. Such individuals have been called leaders because the function assigned to them by the group is that of leadership. A leader's maintenance of his high status and power depends on the satisfaction of the group with his use of this attributed power to lead. Action relevant to the group goals represents the only area in which leaders may freely exercise power. If they exceed a "range of tolerable behavior" reflecting the group's expectations concerning their behavior they may be deposed. On the other hand, as long as they perform the leader role, whether through initiation of action, command, instruction, indirect means, or other mode of influence, to move the group successfully in conformity with its goal-directed expectations, they may expect both to be followed and to retain their power.

Power in formal groups. Leaders in informal groups have some degree of attributed power, which implies responsibility to the group for their functions. Such responsibility is typically developed as a result of interaction between members, and frequently is neither formally spelled out nor written up; nevertheless it may be surprisingly well understood by members of small groups. Appointed leaders in formal groups, on the other hand, receive their "official" power in the form of authority. Authority, according to Stogdill (11, p. 129) gives an individual some freedom to initiate action in an organization. It is usually tied to an area of responsibility for a specific set or range of performances that the individual is expected to exhibit. However, before an appointed leader can use his power effectively, he must not only establish a basis of communication with subordinates, but must also validate his power by gaining acceptance by the subordinate members of the group.

Subordinates in formal groups may comply in a perfunctory way with the demands of a superior if he can enforce them by exercising sanctions. However, such reluctant compliance may fall below minimum standards of work and fails to reflect the contagion and motivated acceptance described above in relation to attributed power in informal groups. This situation, which is general, indicates the importance of the concept of power validation, and places on the appointed leader the requirement of "winning his spurs" by achieving attributed power from the group over which he has vested authority in order to exercise his authority productively. Yet when this is fully accomplished, it is then unnecessary to invoke authority, except perhaps in exceptional or formal circumstances.

A position may be officially invested with considerable authority, but at the same time it is usually so hemmed in by expectations limiting the behavior of its occupant that the price of acceptance by subordinates is virtually complete conformity to role demands and abdication of the personal freedom of decision that is popularly associated with the concept of power. Further discussion of power of leaders in formal groups is presented in the final report of this series (9).

SECTION 5. COMMUNICATION OF INFORMATION

The life-blood of a functioning group is the information circulated to its members that enables coordinated, purposeful joint action. The channels, modes, and content of communication are therefore critical to effective group action. These communication patterns are basically a reflection of the role structure and are most clearly understood as functions of mutual expectations of group members concerning each others' behavior related to the group goals. Thus, the communication patterns are an integral aspect of group structure and their stability as well as effectiveness for the group goals depend on the developing group structure.

Communication involves many modes of information exchange in addition to oral and written verbal messages. Much information is transmitted by gesture, voice pitch, speed, modulation, choice of particular words or phrases, and channels used. Face-to-face communication is richest in information because it permits the widest range of modes of transmission. This form of communication is typical of the informal small group. As size of group increases and as distance, spatial separation, and requirements of specific task positions and equipment impose other restrictions, communication patterns must adapt to situational conditions. Telephone and two-way radio communication retain many of the characteristics of face-to-face exchange, especially when an open, inter-com rather than point-to-point circuit is used. Two-way television even permits gestural expression. All modes of communication involve considerations of intelligibility, comprehension, directness, knowledge of results, follow-up, and motivation of communicators. These problems are discussed in the following paragraphs.

The kinds of communications that people exchange in face-to-face interaction with co-workers in groups were classified by Bales (1) into categories, reported in revised form by Sherif and Sherif (10, p. 227). These are illustrated with an example of each item:

1. Showing solidarity: "We all agree that this action must be taken."
2. Showing tension release: laughing
3. Agreeing: "Ok, I agree."
4. Giving suggestions: "Have you tried telephoning him?"
5. Giving an opinion: "I think that would be too expensive."
6. Giving information: "Our inventory of pins will last only 10 more days."
7. Asking for information: "What is our latest direct labor cost?"
8. Asking for opinion: "Which candidate do you think has more originality?"
9. Disagreeing: "You have the right facts, but I disagree with your interpretation."
10. Showing tension: perspiring, shouting, "clamming up," etc.
11. Asking for suggestions: "Where shall we start?"
12. Showing antagonism: "That insinuation was uncalled for."

Such direct communications reflect face-to-face interactions in small groups and develop into predictable patterns as group structure stabilizes. That is, individuals tend with increasing regularity to find in other individuals sources of support, agreement, information, advice, disagreement and the like. Previously existing status and role relations among individuals may influence the patterns of interaction and communication that develop. However, Sherif and others have reported that the significance of the group task, and the extent to which members agree on its significance, are crucial factors.

The group's perception of the relative importance of various functions is influenced by communication factors. In general, persons who initiate behavior and persons who give needed information achieve high status. Those behaviors come to be attributed to particular roles when they succeed in satisfying group needs, and they become expected. Then, the flow of information to the persons occupying those roles tends to become more regular and they act increasingly as

distributors of information to members of the group. Thus, "Formation of a status hierarchy tends to polarize communications in the direction of upper status levels" (10, p. 232).

Large organizations consist of various numbers of component small groups. The size of a group and the type of task are important factors in determining subgroup divisions. As size and complexity of subgroup organization increase, the necessity for formal channels of communication becomes more critical. These depend on the nature of the communication structure required to support the needs of a particular organization. The larger the organization and the greater the number of links in a communication network, the more difficult it becomes to transmit information promptly and accurately.

In an informal, face-to-face group the communication pattern and the interaction pattern among group members are interchangeable. Thus, by recording how frequently various members interact and the nature of their communications at each interaction, one would be able quite accurately to predict the patterns of likes and dislikes and any cliques among members of the group.

When personnel in a large formal group are required to depend on formal, written communications, such as posted bulletins, memoranda, in-house newsletters or newspapers, and the like, for information essential to work performance and personal welfare, there may be problems. In such situations personnel tend to evaluate the sources and these evaluations are strengthened as people interact. Should the formal channels fail to satisfy the needs of group members for information, they may be supplanted by informal, substitute channels, developed in the situation to meet the existing needs. Thus inadequate and vague messages are often distorted and give rise to rumors, which express wishes, hopes or fears; and withholding of information gives rise to "backstairs channels," which are often inaccurate.

Certain supplementary informal channels have desirable effects in supporting and expanding the formal communication channels. Staff meetings, coffee sessions, and "bull sessions" of various types are examples of informal opportunities for strengthening the flow of

information upward and downward as well as laterally among peer levels. Such supplementary channels function best in an administrative atmosphere that encourages the free flow of information. On the other hand, in an atmosphere of secretiveness and withholding of information, they may deteriorate to "rumor factories." Whenever information is inaccurate and inadequate the effect on group behavior is noticeable.

SECTION 6. GROUP NORMS AND CONTROL OF BEHAVIOR

One characteristic of a stable, established group that clearly distinguishes it from an incipient group is the existence of a definite and generally accepted modus operandi. This does not imply that stable groups are thereby efficient and effective, but only that, as a consequence of their mutual interaction over time, they have worked out mutually acceptable working conventions as to "who does what when, and how." As a result, when questions arise on matters of group operation the answers seem to be already worked out. On the other hand, in incipient groups, every new question requires an ad hoc decision.

The stabilization of role expectations, status hierarchy and patterns of interaction and communication in a group imply that group members "see eye to eye" on matters of mutual interest. The patterns of roles and interactions represent the group structure, while the commonly agreed-upon values, standards, customs and modes of behavior which also emerge are called group norms.

Certain norms are learned early in life in the family groups, in church, neighborhood, and school groups, and are fairly consistent over large segments of the population. These widely accepted values, standards, customs, and "ways of life", often referred to as cultural norms, may be common to many individual groups in a culture because they have already been learned individually by their members and are easily agreed upon. They include basic religious attitudes and values (e.g., In God We Trust), the Golden Rule, standards of fair play, attitudes of chivalry toward women, kindness to children and old people, standard sex roles of men and women, and the like. These originated in small groups, such as the Pilgrims and other early settlers (actually they go back much further) and gradually spread as they were adopted by other groups. Some of them are embodied in historic formal documents, such as the Declaration of Independence and the Constitution of the United States of America; some are endorsed by formal religious creeds and by national organizations, such as Boy Scouts, fraternal organizations and the like. As a result many such cultural norms have virtually universal status in American society.

Groups also develop their own private, in-group norms in the process of interaction. As noted above, these refer to matters of specific role assignments and ways of doing things and evaluating things that are relevant to the group's goal attainment and, therefore, reason for existence. Group norms of a work group may include ways of addressing each other, forms of communication, agreed-upon work rates and standards, schedules of priorities, work breaks, even dress. Group norms in a wide range of informal groups can be illustrated by the following: standards of dress, conduct, work, and speech in a group of teen-agers; standards regarding what constitutes a "proper" amount of work in a factory shop; standards regarding attitudes toward political activity among members of a businessmen's or professional club; standards of ethics among members of a trade association. Such standards or norms rarely specify a single acceptable mode of behavior, but rather, as noted above in describing the power role of a leader, a "range of tolerable behavior."

There are two important points about group norms. The first describes their source; they develop as mutually agreed-upon ways of doing things in the processes of stabilization of roles, power and status structure, communication patterns, and in fact the entire group structure. The second is that they control behavior of group members. These approved ways of doing things thereby become cherished ideals of the in-group and represent "correct" behavior for group members. As a result, to the extent that individual members identify with the in-group and to the extent that the group provides important need satisfactions to the individual members, group norms become their personal standards and thereby regulate their behavior. Loss of friendship or ostracism by members of an informal group is generally an effective threat against deviation. This sort of pressure is often difficult for "outsiders" to appreciate and explains why parents often lose patience with their teen-age childrens' fads in dress and speech. It also throws light on the apparent paradox of "honor among thieves."

New members entering a group often fail to perceive the "unwritten rules" by which in-group members behave in relation to each other. The process of becoming accepted usually involves a period of learning during which the newcomer perceives, assimilates and internalizes the group norms (or else leaves). The in-group members

monitor and eventually approve the transition. The more strongly a new member aspires to be accepted, the more he will conform to the group norms in order to show that he is worthy of acceptance. In fact, it has often been noted in religious groups that converts are typically more rigid about orthodoxy than long-time members born to the faith.

Group norms of informal groups are seldom completely or clearly realized by the people who conform to them, even those who conform most consistently. However, their regulatory influence is based on the principle that conformity within the tolerable range of behavior is a necessary condition of admittance to the in-group and to continuance of membership. Therefore, motivation, in relation to the individual's desire to affiliate, participate and belong in a particular group, is the underlying force by which the norms of that group regulate his behavior..

People tend to be influenced not only by the norms of groups in which they belong and participate as members, but also by the norms of groups to which they aspire or with which they identify, even when they cannot be members. The most highly valued groups are called reference groups, and they are of major importance, along with group norms, in understanding the sources of attitudes and behavior of people in group situations. Reference groups may coincide with membership groups or refer to other groups. Reference group norms may be observed in behavior which represents "trade union philosophy," "Republican leanings," "the management point of view," and the like. Servants of wealthy people frequently adopt the outlook of the upper classes in their attitudes toward the appropriateness of modes of dress and manners in social situations. Such influences of reference group norms on servants often make them more "snobbish" than their employers.

Because multiple group membership is common, conflict between norms of different groups to which individuals belong or identify is also common. Ordinarily group norms are influential only in restricted areas, related to the purposes of particular groups. Nevertheless conflicts between attitudes endorsed by different groups to

which the same individual subscribed may have important consequences. Then the individual may be forced to make a choice, which thereby indicates the reference group which is significant in regulating his behavior. The reference group concept has greatly increased the understanding of the complex effects of group norms on behavior.

Formal organizations may have two sets of norms. Formally prescribed policies and rules represent the official standards of behavior, while the informal group norms are the product of interaction of members of the group. The two frames of reference do not necessarily overlap completely, and informal norms are usually more extensive because they refer to areas of interaction not directly pertinent to the authority of the organization. For example, the rule may prescribe methods of record keeping for a unit, but a group norm may stabilize the function as a duty of the "newest man" or of the lowest ranking member.

Group norms may coincide with policies and rules or conflict with them. When they are in conflict, this is usually the result of group interaction, supported or tolerated by superiors as well as subordinates, in ignoring the formal requirement. Sometimes this is done wisely when conditions change or for any reason the formal rule is unsatisfactory. Frequently, however, such discrepancies reflect conditions responsible for inefficiency in the work situations.

SECTION 7. IMPLICATIONS FOR MILITARY COMMANDERS

A commander, as well as each of his subordinate leaders in the chain of command, occupies the role of an appointed leader, assigned with responsibility and vested authority to direct a particular group toward the accomplishment of a particular mission. Military authority authorizes the appointed superior to command, but human behavior follows lawful principles, and the successful commander is one who exploits these principles effectively. The foregoing discussion has attempted to illuminate basic group behavior processes relevant to the efforts of appointed leaders to carry out their assigned duties. These place the problems of formal groups in the context of group dynamics and are treated under the interrelated headings of group formation and structure, social power, communication, and group norms. The main problem of the appointed leader is to guide interactions of group members toward the goal of creating a mission-oriented informal group. The emphasis on learning throughout the report indicates the importance of a strong training orientation in supervision. Applications of these principles to management and leadership are presented in the final report of this series (9).

An inspiring example of the application of principles of group behavior in military leadership is given in a report by Paterson (6), who, although a radar control officer, was assigned by his station commander to attack the problem of a destructive accident rate at an RAF fighter station during World War II. Available evidence suggested that the accidents represented careless errors of judgment rather than accident proneness. Paterson approached the problem by efforts to increase group cohesion and to achieve a group norm of "good flying" for pressure to conform. After observing and analyzing conversations among pilots, radar controllers, and other personnel, he decided that it was frustration of the desire to get into battle that was responsible for the prevalent irritability, carelessness, and lack of team spirit and that this might be overcome by giving the pilots something to fight, symbolic of the enemy. Since constant bad weather prevented the pilots from engaging the enemy in battle, the weather was on the side of the enemy and could be made symbolic of the enemy. The station might fight the enemy by fighting the weather.

The account of how he identified the high status, respected, influential members of each informal group (whom he referred to as examplars), and, working tactfully and unobtrusively through them, set in motion group interactions that gradually affected every person on the station with a common purpose, is one of the thrilling anecdotes of the war (6).

Paterson's particular approach may not fit any other specific situation, but the principles are general enough to be applied to any situation if adjusted to the characteristics of personnel and surrounding conditions. Some of his definitions illustrate this generality. With reference to team spirit and teamwork, he emphasized the importance of morale based on appreciation of the common purpose and knowledge that everyone in his role is "doing his bit." Teamwork, the coordination of various functions, depends on the development of such morale, although leaders or "experts" are necessary to that coordination. But it is not sufficient to have one person tell others how to perform their functions. They must also know something of the way in which their functions are coordinated, which is the background to the popular interest in communication and liaison.

On group structure and roles, Paterson said: ". . . not only was appreciation of functional co-ordination necessary, but also appreciation of the persons performing those functions; that is, estimation of role . . . Function, hence role, has no meaning unless it is one of a structure of functions necessary to achieve the purpose of a group . . . If a man performs no function of significance to a group, he cannot be a member of that group . . . Thus at Bogfield there could be no room for one who did not perform a function which helped in some way to put an aircraft and its pilot into battle with the enemy. . . . If the word "work" is taken to be synonymous with "job," then work may be said to refer to what a man does when what he does has functional significance, his contribution to the group activity. A man working fills a role. He and his role are identified and in this he becomes a meaning to society . . . For a sense of belongingness, role, hence structure, is essential."

REFERENCES

1. Bales, R. F. Interaction Process Analysis: A Method for the Study of Small Groups. Reading, Mass.: Addison-Wesley Publishing Co., Inc., 1950.

2. Brown, A. Organization, A Formulation of Principle. New York: Hibbert Printing Company, 1945.

3. Eilbert, L. R. Indoctrination procedures for personnel assigned to Arctic sites. Fort Wainwright, Alaska, Arctic Aeromedical Laboratory, Report No. AAL TR 60-12, April, 1961.

4. Hood, P. D., Halpin, A. W., Hanitchok, J. J., Siegel, L., and Hemphill, J. K. Crew Member Agreement on RB-47 Crew Operating Procedure. Lackland AFB, Texas: Air Force Personnel and Training Research Center, Research Report AFPTRC-TN-57-64, 1957.

5. Lippitt, R., Polansky, N., Redl, F., and Rosen, S. The dynamics of power. A field study of social influence in groups of children. In Maccoby, E. E., Newcomb, T. M., and Hartley, E. L., eds., Readings in Social Psychology. New York: Holt, Rinehart & Winston, Inc., 1958.

6. Paterson, T. T. Morale in War and Work: An Experiment in the Management of Men. London: Max Parrish, 1955.

7. Sells, S. B. Group behavior problems in flight. In Sells, S. B. and Berry, C. A., eds., Human Factors in Jet and Space Travel. New York: The Ronald Press Company, 1961.

8. Sells, S. B. Essentials of Psychology. New York: The Ronald Press Company, 1962.

9. Sells, S. B. Military Small Group Performance Under Isolation and Stress - Critical Review. V. Psychological Principles of Management and Leadership. Fort Wainwright, Alaska: Arctic Aeromedical Laboratory, Alaskan Air Command, Report No. AAL TDR 62-35, 1962.

10. Sherif, M., & Sherif, C. W. An Outline of Social Psychology. New York: Harper and Bros., 1956.

11. Stogdill, R. M. Individual Behavior and Group Achievement. Fair Lawn, N. J.: Oxford University Press, 1959.